Executive Summary
Contents

PREFACE

This report is presented in compliance with the Scope of Work, Exhibit B of Agreement Y-6091 between Morrison Knudsen Corporation and Washington State Department of Transportation, for the *Options for Passenger Rail in the Pacific Northwest Rail Corridor*. It was prepared by the San Francisco office of Morrison Knudsen Corporation, with input from the MK/HDR Team members, including the following firms:

Morrison Knudsen Corporation
HDR Engineering, Inc.
Wilbur Smith Associates
Morrison Hershfield Limited
Infrastructure Consulting Corporation
Berk & Associates, Inc.
Parametrix, Inc.
Trans-Actions, Inc.

The report was prepared under the guidance of the Pacific Northwest Rail Corridor Technical Oversight Committee. This committee includes the following members:

Jim Slakey, Director, Public Transportation and Rail Division
Washington State Department of Transportation

Kenneth M. Uznanski, Jr., Manager , Rail Passenger Program
Public Transportation and Rail Division
Washington State Department of Transportation

Valerie Rodman, Statewide Public Transportation Planning Project Manager
Public Transportation and Rail Division
Washington State Department of Transportation

Erik East, Manager, High Speed Rail Program
Oregon Department of Transportation

Robert Krebs, Service Operations Manager, High Speed Rail Program
Oregon Department of Transportation

Nicholas Vincent, Senior Policy Advisor, Transportation Policy Branch
Ministry of Employment and Investment, British Columbia

Ann McAlister, Policy Advisor, Transportation Policy Branch
Ministry of Employment and Investment, British Columbia

Kurt Laird, District Superintendent - West
National Railroad Passenger Corporation

LeRoy Hall, Burlington Northern Railroad

R. H. " Andy" Anderson, Burlington Northern Railroad

Michael Ongerth, Vice President Strategic Development
Southern Pacific Lines

EXECUTIVE SUMMARY

A. INTRODUCTION

The Pacific Northwest Rail Corridor described and analyzed in this report extends for 466 miles from Eugene, Oregon to Vancouver, British Columbia. The principal main line rail route passes through Albany, Salem, and Portland, Oregon; Vancouver, Kelso, Centralia, Olympia/Lacey, Tacoma, Seattle, Edmonds, Everett, Mt. Vernon/Burlington, and Bellingham, Washington; to New Westminster and Vancouver, British Columbia. Figure ES-1 provides a map of the rail corridor.

Intercity passenger mobility is at present largely a function of the corridor's principal highway link, Interstate 5 in the U.S., and Highway 99 in British Columbia. To a lesser extent, intercity corridor travel is handled by regional air carriers serving regional airports at Eugene, Portland, Seattle-Tacoma, Bellingham, and Vancouver, B.C., and by intercity rail passenger and bus services provided by Amtrak, Greyhound, and other private carriers.

At the present time, between 6 and 7 million people live in locations within 10 to 20 miles of the railroad, and the corridor population is expected to grow over 40 percent during the next 20 years. With this growth comes a stronger economy, a predicted 50 percent increase in jobs, and a 75 percent increase in regional intercity travel.

The efficient movement of people and goods within our region is crucial to the ability to compete in world markets, to protect the environment, and to maintain a high quality of life. Improving the rail system within the region is an option that could cost effectively ease our "growing pains."

Over the past three years, the states of Washington and Oregon in particular have commissioned a series of feasibility studies intended to assess the practical problems, the costs, and the benefits of providing public investment to upgrade the corridor passenger rail system.

In connection with these studies, the states of Washington and Oregon have begun specific programs to upgrade rail trackage, improve signal systems and stations, and acquire rolling stock to expand intercity rail passenger service. These efforts have resulted in extending additional corridor passenger trains from Portland to Eugene, expanding service between Portland and Seattle, and reinstating service between Seattle and Vancouver, B.C. Altogether, more than $80 million has been committed so far by the states of Washington and Oregon and by Burlington Northern through cooperative arrangements between the public agencies and the private railroads toward implementation of near-term improvements to rail passenger service.

This document, as its title states, is an Options Report for the entire corridor. Until now, portions of the corridor have been analyzed separately, and improvement strategies developed for distinct segments. This report presents an overview of the whole corridor for the first time. It necessarily reflects the fact that the required improvements in some sectors of the corridor are understood better than in others, and that near-term improvement needs are understood better than long-term needs. In particular, the specific infrastructure improvements, and their estimated costs, can be expected to

Figure ES-1

change as the environmental and commercial impacts are better understood. As the analysis progresses, this document will develop into a plan for the corridor that will provide a better match between cost-effective investment in railway infrastructure, and the service requirements of the passenger and freight users.

B. OBJECTIVES OF THE RAIL PASSENGER OPTIONS REPORT

The Options Report has two objectives:

a. Collect and summarize the research developed over the past three years into a single document which can serve as the basis for conducting the environmental impact reviews necessary prior to designing and constructing further improvements; and

b. Lay out the priorities, timing, and financial demands of the long-run strategy so that all concerned can see the architecture of the system as it develops.

The *Options For Passenger Rail In The Pacific Northwest Rail Corridor* adopts an "incremental" approach to improving the capacity and capability of the rail corridor. The incremental approach supposes that investment occurs in stages or phases rather than all at once. The incremental approach also supposes that significant investment is directed at improving existing facilities, as opposed to constructing brand new or replacement facilities.

There are a number of reasons for adopting the incremental approach:

a. Total investment is significantly less because the new investment builds upon existing value: the private railroads already possess main line rights-of-way capable of being adapted to more and higher speed service;

b. Financing requirements are spread out over time, as compared with the cost impacts of a major infrastructure project, which must be constructed all at once if it is to have any substantial utility;

c. The level of investment can be tailored, by timing and line segment, to the development of demand. Some sectors may never warrant the level of investment appropriate for the most heavily utilized segments;

d. The incremental improvements to the existing infrastructure can be utilized to enhance rail passenger service as each is completed, providing identifiable benefits derived from each level of investment;

e. Environmental impacts should be less where existing rail lines are being upgraded, as opposed to the impacts of new or "greenfield" alignments;

f. Incremental improvements on existing lines tend to provide service that goes closer to the major origins and destinations than do new alignments, which must necessarily avoid built-up areas. There are exceptions to this rule: as cities spread out into suburbs, the older rail terminals downtown may be in the wrong places. That does not appear to be the case in the PNWRC; in fact, one of the benefits of the approach taken is that the metropolitan centers in places such as Salem, Portland, Tacoma, and Seattle benefit from increased utility in the passenger rail system.

The incremental approach has some disadvantages, too. Average speeds are not as high as with new systems, and there is sometimes a concern that an incrementally upgraded system will not attain truly competitive trip times. Analyses done for the PNWRC in 1992 suggested that an incremental system, similar to the one described in this Options Report, might gather 50 percent of the ridership of a truly High Speed (185 mph) European system. But the total public sector investment in infrastructure described in this incremental Options Report is only 10 to 12 percent of the infrastructure cost projected for a brand new, Ultra High Speed system.[1] In addition, the current $1.4 billion infrastructure cost projections for 20 years of incremental development in the PNWRC include the investment required to build three significant stretches of new alignment, one of which in British Columbia could be a long tunnel, and the purely local investment that would be needed to support a commuter rail passenger operation between Everett and Tacoma, Washington. Thus, not all the projected capital cost would necessarily be incurred if all the improvements are ultimately not required.

Finally, another development has led to the adoption of the incremental approach; namely, the attitude of the Class 1 railroads. In the past, the carriers viewed rail passenger service as a liability. Now, the carriers in the PNWRC are willing to explore ways to make public investment in better rail passenger service a "win-win" proposition. This evolution in carrier attitudes, into the present framework in which a genuine public-private partnership exists, makes the incremental approach practical. If the carriers were not willing to put the value of their existing investment in Options Reportt at the disposal of the public, in return for an appropriate public investment in the private property, the incremental approach simply would not work. Instead, the public would have to bear 100 percent of the cost of investing in new transportation infrastructure, whether in railways, highways, or airports.

C. PUBLIC BENEFITS OF THE PROJECT

The following factors underlie the justification for development of the PNWRC:

a. Population and development pressures will continue to require increased capacity and investment in the kind of transportation infrastructure that is compatible with sound growth management;

b. Capital funding for transportation infrastructure (highway) improvements will be difficult to come by, particularly if the electorate continues to be reluctant to increase taxes;

c. The environmental impacts of constructing new transportation facilities will continue to be an issue;

d. Rail travel offers significant environmental benefits as compared to automobile use;

e. Comprehensive, multi-modal transportation systems offer opportunities to combine mass transportation efficiency with individual convenience; and

f. Improved transportation infrastructure will provide economic benefits to the region as a whole.

[1] See High Speed Ground Transportation Study, October 1992.

All these factors are part of the economic and social case that exists for the PNWRC. The issue is ultimately whether the public interest is better served by investment in the rail system than it would be if the money were invested in highways, or invested in something other than transportation.

If no funds are committed to public transportation infrastructure, and the quality of transportation is allowed to decay for lack of investment, regional mobility will ultimately suffer to such an extent that both economic and social life will be adversely affected. There must be continuing investment in transportation infrastructure, or the region will eventually stagnate from congestion, while competing areas in the international market place gain market share.

So the issue is not "no investment," but a question of which investment(s) makes the most sense. In this respect, the economics of incremental upgrades to existing rail lines are very attractive. Consider, for example, the following general benefits of the proposed investment Options Report:

a. Similar to other public transportation investments (i.e., airports and highways), improvements that are necessary for the operation of incremental higher speed rail passenger service would result in a more efficient PNWRC rail system, including the movement of freight. The specific engineering improvements proposed and discussed in this Options Report have been developed from a series of technically sophisticated analyses of railroad line capacity between Eugene and Vancouver, B.C., so that the improvement program provides rail passenger operational objectives while protecting the existing freight infrastructure.

b. The Options Report, if implemented as proposed, would create added rail capacity in the major urban areas of the corridor. Some of this capacity could be used for commuter services, if local jurisdictions, the carriers, and the freight users concur. For example, the Puget Sound area could gain the capacity for commuter rail service at the same time it gains increased service to destinations such as Portland and Vancouver, B.C. The point is simply that investment in the rail system benefits a combination of long- and short-haul users, whereas urban highway projects are generally required by growth only in short-haul traffic. In the Interstate 5 region, certain investments in airport improvements might be avoided by substituting corridor rail service for corridor air service. In that manner landing and departure capacity needed for future corridor flights could be preserved instead for truly long-haul users.

A staged improvement program that upgrades existing rail lines provides significant transportation capacity at relatively low cost. When measured by cost-per-unit of *capacity*, rail systems generally compare very favorably with highway systems.

As a rough comparison of the economics of expanding rail versus highway systems, consider the cost of adding a freeway lane in each direction for 185 miles, or roughly the distance from Portland to Seattle. On the average, each lane might cost $6.5 million per mile, depending on how many bridges and interchanges need to be rebuilt, how much urban land is required.[2] To add one lane each way, this works out to $2.4 billion for the distance.

By contrast, the upgrade of the PNWRC rail line as proposed in this Options Report, for the 185 miles between Portland and Seattle, would cost only $507 million, or $2.7 million per mile. Furthermore, the rail improvement is not only cheaper in absolute terms, it is cheaper per unit of additional capacity. Table ES-1, below, compares the cost-per-mile of the highway and rail improvements with their added capacity to move people.[3]

Table ES-1
Comparative Cost
Highway and Rail Capacity

	Typical Cost Per Mile	Latent Capacity	Typical Cost Per Psgr. Mile
One Freeway Lane	$6.5 Million	32,400 Psgrs. Per Day	$200
Upgrade Rail Line	$2.7 Million	30,000 Psgrs. Per Day	$90

The issue, however, is not simply the cost of capacity. Put purely in terms of the most efficient way to provide incremental transportation capacity, the rail line improvements are economically more efficient than investment in other transportation infrastructure. But the value of the capacity will be realized only if people use the system. This requires that the rail system be integrated with other modes. As connections improve, ridership rises. And the total cost of the rail system, and so its total benefits, will be much more a function of the number of passengers using the system, relative to its capacity, than of the pure cost of the capacity. Railroads inherently have high fixed costs, and therefore benefit disproportionately from economies of scale.

[2] 1993 Oregon Roads Finance Study, Phase II Technical Report. Sometimes highway costs are much higher. The replacement Cypress Freeway in Oakland, California is projected to cost almost $700 million, or over $140 million per mile. The cost of this one 5-mile highway project would pay for two-thirds of the entire infrastructure upgrade cost of the whole 466-mile PNWRC.

[3] The comparison assumes a freeway lane can handle 2,200 passengers per hour (about 1,800 typical vehicles), while the improved railway could handle 2,000 passengers per hour (about four trains). The peak capacity of the railway could be made much higher if required, simply by running more, and longer, trains.

D. COST RECOVERY

The costs of any publicly funded transportation project inevitably become the subject of debate because the public perceives the public capital investment to be only part of the problem. The other part of the problem is the need for operating subsidy. In point of fact, competing modes — especially highways — require continuing subsidies too, since user fees and fuel taxes do not always cover the full cost of operating and maintaining the infrastructure.

Nevertheless, the *perception* is that while highways may require capital "subsidy" (i.e., investment), they don't require operating subsidies, while trains, buses and streetcars do. Subsidies mean taxes, and voters generally dislike taxes. Consequently, rail systems may languish, not so much because capital funding is lacking but because on-going operating assistance is lacking.

In the PNWRC, the structure of the public-private partnership offers some new strategies for dealing with cost-recovery issues. For example, the value of public capital investment in private railway infrastructure can be offset against the costs of continuing maintenance. This strategy allows the public to invest capital on a project specific basis, while the carriers, who benefit from the use of the improved facility, contribute by paying a larger share of the maintenance. For them, the avoided cost of the project capital is a significant economic benefit.

Other strategies potentially exist to mitigate the on-going operating costs. From a policy point of view, public agencies are increasingly able to use transportation funds flexibly, according to the needs of the local environment.

Finally, there are other aspects of the public-private partnership approach to funding that may play a role as well, including, for example, commercial development opportunities on land at or adjacent to stations.

Even so, this Options Report must recognize that the PNWRC will require both capital and operating assistance over the life of the Options Reportning horizon. For this reason, the final and in some ways most important section of this document is the chapter on the financial issues.

E. IMPROVED RUNNING TIMES AND SERVICE LEVELS

Improvements designed to increase passenger train running time performance have been proposed by both Washington and Oregon in their rail passenger Options Reports. Short-term improvements are proposed to be accomplished over the next five to six years (Phase 1), while longer term improvements take place over 20 years or more (Phases 2-4 inclusive).

Table ES-2 shows the effect of improvements in each phase on scheduled running times.

Table ES-2
PNWRC Scheduled Running Time Assumptions
(Hours:Minutes)

	Current Base	Phase 1	Phase 2	Phase 3	Phase 4
Vancouver BC to Seattle	3:55[4]	3:40	3:24	3:13	2:57
Seattle to Portland	3:50	3:17	2:59	2:42	2:30
Portland to Eugene	2:36	2:15	2:00	1:50	1:45
Total Time[5]	10:21	9:12	8:23	7:45	7:12

Phase 1: 5-6 years from current base
Phase 2: 5-6 years from Phase 1
Phase 3: 5-6 years from Phase 2
Phase 4: 5-6 years from Phase 3

The total improvement in running time in each Options Reportning phase is the sum of engineering (track and signal) improvements, and rolling stock technology. All of the future running times shown in Table ES-2 assume the benefits of high speed trainsets. For example, the total reductions in trip times in Phase 1 assume a combination of improvements from engineering work and from use of high technology rolling stock equipped with tilt suspension, released to operate at higher curve speeds. The time reduction in Phase 1 thus assumes:

Vancouver, BC-Seattle	Rolling stock time savings	- 9 minutes
	Engineering time savings	- 6 minutes
Seattle-Portland	Rolling stock time savings	- 14 minutes
	Engineering time savings	- 19 minutes
Portland-Eugene	Rolling stock time savings	- 6 minutes
	Engineering time savings	- 15 minutes

Given the trip time reductions outlined in the Washington and Oregon Options plans for the short term, and the long range objective of continuing to improve the track and signal facilities in the corridor as frequencies are increased, it seems reasonable to assume the target travel times between the major centers along the corridor shown in Table ES-2. These travel times are attainable largely by using current rail alignments but require considerable track upgrading for higher speeds. Running time performance in Phases 3 and 4 assumes maximum operating speeds up to 125 mph on sections of the corridor.

Running times beyond year 2000 assume implementation of certain new alignments for higher speed operations, such as the Point Defiance Bypass and alternative alignments in British Columbia. They also assume use of tilt train technology.

F. PROJECTED SERVICE LEVELS

[4] After all improvements underway are complete, estimated for December 1995.

[5] Excludes Seattle and Portland dwell time.

The Options Report assumes the corridor can support added frequencies over the 20-year period as shown in Table ES-3. These frequency levels will provide hourly corridor service between Seattle and Portland in 20 years, and service every 2 to 3 hours on the extensions to Vancouver, BC and to Eugene.

Table ES-3 also includes the estimated number of trainsets required for operation of the projected service levels for each phase. This includes spare trainsets required when one or two trainsets are removed from service for performance of mandated periodic maintenance/inspection. Each trainset consists of a locomotive and sufficient cars to accommodate projected patronage on an average travel day. To obtain maximum utilization of the rolling stock and to provide for maintenance and servicing of the trainsets, each trainset is assumed to make a minimum of a roundtrip each day, with some trainsets making up to three trips per day. It is also assumed that there will be one central maintenance/service base, either in Portland or Seattle.

Table ES-3
Assumed Corridor Service Levels
(Daily Round Trips)

		Current Base	Phase 1	Phase 2	Phase 3	Phase 4
Vancouver BC-Seattle:	Corridor	1	3	4	5	6
	Long Distance	0	1	1	1	1
Seattle-Portland:	Corridor	2	6	9	12	15
	Long Distance	2	2	2	2	2
Portland-Eugene:	Corridor	1	3	5	6	7
	Long Distance	1	1	1	1	1
Equipment Requirements:	Trainsets	4	7	12	15	15

Long distance train assumptions include the Empire Builder operating between Everett and Seattle, the Pioneer between Seattle and Portland, and the Coast Starlight between Seattle and Eugene. The long distance trains are assumed to be daily, although frequency is less than daily now.

G. PATRONAGE PROJECTIONS

A number of interrelated factors will be responsible for patronage growth on rail services in the corridor. The key factors will be frequency of service, the speed of service compared with driving times over short distances and air travel times over longer distances, fare levels as related to the real or perceived cost of competing modes, and convenience and attractiveness of the service. Other factors that influence patronage are population and business activity growth in the service area, the convenience of station facilities, and the degree of intermodal travel encouraged by the rail system via connecting services. Finally, the ability of the rail system to satisfy a variety of trip purposes that include business travel, vacation or leisure travel, and other purposes will influence patronage on the system.

Because the current study does not include resources for new ridership modeling, the projections developed for the state plans have been adjusted and extrapolated, and related to the probable frequencies of train operation assumed for this plan. To this extent, they may represent — particularly in the more distant years — an "if you build it, they will come" estimate of patronage in the sense that it is based on continuing patronage attraction by added services rather than an analysis of total travel and an assignment of reasonable market share to rail. Table ES-4 shows projected annual patronage.

Table ES-4
Projected Annual Patronage Data

	1995	2000	2005	2010	2015
Annual Train Miles (000)	475.9	1,427.8	2,130.1	2,741.8	3,353.6
Low PM/TM	120	125	130	135	140
High PM/TM	130	140	150	165	180
Low Passenger Miles (000)	57,108	178,475	276,913	370,143	469,504
High Passenger Miles (000)	61,867	199,892	319,515	452,397	603,648
Average Trip Distance	165	190	215	225	230
Low Passengers (000)	346.1	939.3	1,288.0	1,645.1	2,041.3
High Passengers (000)	374.9	1,052.1	1,486.1	2,010.7	2,624.6
Long Distance Passengers (000)	245.0	250.0	255.0	260.0	260.0
Low Total Passengers (000)	**591.1**	**1,189.3**	**1,543.0**	**1,905.1**	**2,301.3**
High Total Passengers (000)	**619.9**	**1,302.1**	**1,741.1**	**2,270.7**	**2,884.6**

Note: Long distance passengers are passengers from corridor points to stations outside the corridor on Amtrak long distance trains. These projections assume continuation of current long distance trains, on a daily basis. Fare levels and reservation policies are expected to divert most corridor passengers away from the long distance trains as corridor frequencies increase.

The preliminary patronage projections in Table ES-4 are generally consistent with the projections of the Washington Rail Passenger Program for similar service levels between Seattle and Portland. To verify the reasonableness of the projections, the Options Report includes projected average trip distance and passenger miles per train mile (PM/TM), which is a measure of the average occupancy of each train. Average trip lengths are expected to increase as more opportunities are provided for through travel within the corridor, and PM/TM measures are expected to increase as the service expands.

H. PROPOSED IMPROVEMENTS TO RAILROAD INFRASTRUCTURE

The improvement plan for railroad roadway (track, structures, and signals) contains three components:

a. Improvements to existing trackage, designed to permit increased frequencies and speeds of passenger service to operate in conjunction with the expected level of freight service (shared use trackage).

b. Construction of new passenger trackage parallel to the existing trackage, but separate from it (shared use right-of-way).

c. New passenger bypass routes in key areas of British Columbia, Washington, and Oregon.

The improvement plan is based on the following engineering strategy:

a. First priority is accorded to designing and constructing low-cost improvements that will relieve obvious operating bottlenecks and/or points where train speeds are severely restricted. This approach has been adopted for two reasons: first, the total capacity of a rail line is usually a function of its most restricted point or points; and second, the greatest increases in *average* train speed are achieved by increasing slow speed zones to modestly higher ones, as opposed to increasing high maximum speed zones to even higher maximum speeds[6].

b. Second priority is accorded to designing and constructing projects that increase the capacity and capability of existing railway infrastructure. In most cases, incremental improvements to existing trackage will help minimize the environmental impacts caused by new construction, and will build upon the value of investment that is already there. In some cases, such as the Point Defiance Bypass in Washington, it is wiser to invest in a new facility rather than attempting to build new capacity incrementally on the segment along the Tacoma Narrows where high costs and severe impacts on land use would result. In the case of the Point Defiance Bypass, use can be made of an existing rail line and its right-of-way, so even this major investment follows the principle that existing facilities should be upgraded wherever possible.

c. Third priority is accorded to those large mega-projects, such as the design and construction of the proposed BC and Oregon bypasses, which enhance service speeds and train frequencies, but which appear to be relatively more expensive in cost-per-mile, and have potentially larger environmental impacts to overcome. They will generally take longer to bring to fruition, and therefore logically are more likely to come on line toward the end of the planning horizon.

Table ES-5 lists costs and time savings for capital projects, in order of estimated functional desirability, by jurisdiction and Options Report phase. In general, groups of projects within a given Options Report phase can be assumed to have a similar utility and priority. Experience with the PNWRC investment made to date suggests that individual project priorities within a given plan and contract period will change from time to time due to the permitting sequence, material purchase lead

[6] Increasing a train's speed from 30 mph to 60 mph (30 mph difference) saves 1 minute per mile; increasing the same train's speed from 90 mph to 120 mph (30 mph difference) saves only 10 seconds per mile.

times, and similar factors. Consequently, it is pointless to rigorously assign specific project priorities in the Option Report document when the actual implementation of the plan will combine groups of associated projects that can be constructed all at one time. At the present time, the proposed project sequencing is a function of four factors:

a. The need to relieve capacity constraints caused by increases in train frequencies;

b. The desire to improve trip times at a steady pace throughout the planning horizon, in support of the commercial goals of the service;

c. A recognition that some projects will take longer to clear the environmental impact review process than others; and

d. A desire to space out the funding requirements within each jurisdiction in a way that recognizes practical limits on finances.

The ranking of projects is in order of functional desirability. This is not the same as ranking the projects in order of constructability. Some of the lower priority projects may be more constructable that the higher priority ones, but some high priority projects (such as the Point Defiance Bypass) are prerequisites for expanding the passenger service, and cannot be delayed without adversely affecting the commercial viability of the service. The train frequencies that are shown in Table ES-3 are vital to the growth in ridership and revenues. These frequency increases cannot be achieved without the Phase I and II investment. Portions of the Phase III investment are also critical to improving rail mobility in the Corridor.

I. ALTERNATIVE ROUTES IN OREGON, WASHINGTON, AND BRITISH COLUMBIA

As part of the Pacific Northwest Passenger Rail Corridor Study, a bypass of the Harrisburg and Junction City areas in Oregon and a bypass of the Point Defiance area in Washington were included as options to reduce travel time along the corridor. For both of these areas, various bypass options were developed to determine their feasibility and magnitude of their associated impacts and costs. If these general bypass options warrant further investigation, more specific alternatives will be developed and a complete environmental review process with a thorough agency and public involvement program will be conducted.

In British Columbia, the existing Burlington Northern tracks used by Amtrak trains skirt the Pacific shoreline. In the community of White Rock, the track is bordered for a considerable distance by a public walkway on the east side, and by beach and recreational areas on the west side. Unrestricted pedestrian access to the railroad right-of-way is a concern. Upgrades intended to limit the access of pedestrian traffic across the railway right-of-way are being performed. To implement higher speed intercity passenger service along this section of the PNWRC, various bypass options were investigated to determine the benefit in terms of travel time versus estimated capital cost.

Bypass options in all jurisdictions will need to be investigated further to consider capital, operating, and societal benefits and costs.

J. ENVIRONMENTAL CONDITIONS AND IMPACTS

An environmental review was conducted to ensure that 1) the Pacific Northwest Rail Corridor Options Report does not gravely impact the natural and built environment, and 2) any environmental features that may constrain the location of alternative rail alignments are identified. An in-depth environmental analysis was not performed. Following completion of this preliminary work, the Options Report alternatives will undergo an environmental assessment as part of the U.S. National Environmental Policy Act (NEPA). If and when an environmental assessment is required in British Columbia, it will be subject to the British Columbia Environmental Assessment Act and appropriate federal legislation. In general, improvements within existing railroad alignments are not expected to significantly affect the environment.

A number of steps were taken to identify the existing environmental conditions and impacts. Step one included the collection and review of existing data. In particular, this entailed review of previously documented environmental conditions relating to operations and physical improvements to the existing rail line between Eugene, Oregon and Vancouver, British Columbia. Step two entailed field trips to the three bypass areas as well as to specific improvement areas along the existing right-of-way. Step three involved the collection of additional environmental data as necessary.

General conditions were documented and areas of concern were mapped. When doing this inventory and analysis, NEPA technical areas were used as a guideline to ensure that no environmental features were missed. However, particular technical areas were addressed only if there appeared to be a major constraint. If a fatal flaw or major concern was identified for a particular bypass or improvement, then that technical area was not addressed.

K. INSTITUTIONAL AND COMMUNITY INVOLVEMENT

As the PNWRC Options Report focuses primarily on the collection and analysis of engineering and operations issues, there has been minimal contact with the public during its completion. The public involvement tasks of this phase have been to identify the major issues that may require community outreach as the planning process moves into subsequent phases, and to recommend an approach and techniques for achieving an effective public and institutional involvement program.

At this time, the level of participation by each of the states and the Government of British Columbia is not clear, nor does the Province currently have a commitment to a next phase. Thus, the ongoing project sponsorship may be by one or more of the three parties. Because public involvement activities should reflect this sponsorship, this report recommends options for structuring public involvement depending upon each sponsor's level of involvement

In summary, it is recommended that a corridor-wide Institutional and Community Involvement Plan be developed and distributed within 60 days of the inception of the next project phase so that all interested parties have a road map for their potential involvement. We also recommend that the plan as developed contain provisions for its evaluation and revision as needed.

L. CAPITAL INVESTMENT NEEDS

Track and Facility Improvements and Rolling Stock

Table ES-6 presents the total capital investments required to achieve the desired travel times between Seattle-Vancouver, B.C. and Seattle-Eugene.

In the earlier phases (I and II), these improvements are closely coordinated with the required line capacity under expected rail traffic demand scenarios. In the later phases, the investment Options Report accounts for known capacity requirements, but the program is still tentative, and subject to further refinement in cooperation with the freight railroads.

These cost estimates are given in 1995 dollars and account for the engineering and construction elements of facility improvements and the necessary rolling stock.

Land Acquisition Costs

It is assumed that some of the track expansions, improvements and upgrades along the existing alignment in the Corridor will occur within the railroad owned right-of-way. However, during the project specific engineering and environmental analysis, improvements that would require additional right-of-way may be identified.

Table ES-6
Estimated Capital Costs by Phase and Jurisdiction (Millions of US$)

	Phase I	Phase II	Phase III	Phase IV	Total
Oregon	$ 34.4	$ 46.9	$ 46.6	$ 55.2	$ 183.1
WA, S. of Seattle	$140.0	$146.8	$ 106.7	$ 96.6	$ 490.1
WA, N. of Seattle	$ 16.6	$ 12.2	$ 44.3	$ 22.1	$ 95.2
Washington Total	$156.6	$159.0	$151.0	$118.7	$ 585.3
British Columbia	$ 43.1	$ 21.1	$87.4	$474.8	$ 626.3
Corridor Investments	234.0	$227.1	$285.0	$648.7	$1,394.7
Rolling Stock	$ 119.0	$85.0	$34.0	$ 17.0	$ 255.0
Corridor Totals	$353.0	$312.1	$319.0	$665.7	$1,649.8

Source: MK/HDR, 1995, may not add due to rounding.

Construction of any of the bypass options proposed for Oregon, Washington, or British Columbia would require acquisition of property. Although a more detailed investigation of right-of-way requirements and costs will be undertaken in the environmental phase of this study, order-of-magnitude costs for land acquisition have been developed for the proposed bypasses. The costs are as follows:

Harrisburg Bypass	$3 million
Point Defiance Bypass	$10 million
White Rock Bypass	$23 million
Total Land Acquisition Costs	$36 million

Intermodal Facility/Station Improvements

Stations and intermodal facilities in the PNWRC presently utilized by Amtrak include the following:

- Oregon - Eugene, Albany, Salem, and Portland Union Station
- Washington - Vancouver, Kelso, Centralia, Olympia-Lacey, Tacoma, Seattle, Edmonds, Everett, Mount Vernon-Burlington, Bellingham, Blaine
- British Columbia - Vancouver (Pacific Central Station)

Nearly all of these stations have been improved or have improvements programmed to be implemented in the future. Estimated cost of improvements over the next 20 years is $135.5 million.

Summary of Capital Costs

The following is a summary of capital costs for the PNWRC Passenger Options Report:

Project Costs	$1,394.7 million
Rolling Stock	255.0 million
Intermodal Facility/Station Costs	135.5 million
Land Acquisition Costs	36.0 million
Total	$1,821.2 million, say $1.82billion

Assumptions in the development of these costs include the following:

1. The source of investment necessary for funding these improvements is not identified. There is likely to be a public/private partnership that is yet to be negotiated.
2. All potential public investment is included.
3. A highest order of magnitude cost for OR, WA, and BC bypasses are funded.

The rate at which system operating goals are achieved will be determined by the rate of public investment in the corridor. Funding will be discussed in a later section of this chapter; however, the availability of funding will have a significant impact on the time required to accomplish the operational targets. For example, the estimated capital needs of $1.8 billion would require annual capital expenditures of approximately $90 million to build the system in 20 years (approximately 5 years per phase) or $60 million per year to accomplish the task in 30 years (7.5 years per phase). These figures do not include allowances for inflation or the funds needed for additional right-of-way, extensive environmental mitigation, or interest on any debt used for the project.

Clearly, this is a program that will require significant public investments. However, one of the advantages of pursuing an incremental development approach is that the decision to fund individual projects is made on an annual or biennial basis and can be made on project merits, using available current information and system performance relative to policy goals. If the performance of the system does not achieve certain levels, the next incremental project(s) may not be successful in the competition for transportation funding. Funds may be more effectively

used for other transportation improvements. Thus, the point at which the corridor is "built-out" will likely depend on the success of the program in meeting its stated service, ridership and cost recovery goals.

M. OPERATING COSTS AND REVENUES

The primary source of operating cost data for rail passenger service is Amtrak. Over the years, Amtrak has developed an analysis methodology for determining direct operating costs of train service, and for allocating shared costs and systemwide costs to each route or service. Amtrak is now revising this methodology based on more recent examination of their accounting and reporting systems, since the former system is believed to understate the real costs of train service because it underallocated the shared and systemwide costs. The new methodology is not yet fully developed, and we have adapted available data to follow the proposed cost methodology. The methodology consists of determining costs in three major groupings:

1) **Costs directly related to each train or group of trains comprising a particular service.** These would include train and engine crew costs, fuel, on-board service labor and supplies, payments to railroads for providing services, equipment maintenance, reservations and sales expenses, and station expenses related directly to the service. Generally, these are the costs that would be saved upon discontinuance of any train. For the most part, they are driven by service measurements, such as train miles, car or engine miles, number of passengers, or similar factors.

2) **Costs related to a particular route or group of related routes comprising a system, and shared between a number of trains using that route or system of routes.** Typically these will include station and facility ownership costs and management costs that relate to the route or the system, rather than to any single train operated over the route. These costs would not vary significantly as individual trains are added to or deleted from the route, but would not be incurred if there were no service at all over the route.

3) **Costs of management and operation of the entire Amtrak system that are not directly related to either individual trains or to route systems.**

The Options Report estimates service costs based primarily on the first category of costs — those stemming directly from train operations. However, it is likely that future contracts with states for operation of corridor services that are not part of Amtrak's national system trains will include not only the direct costs, but will also allocate portions of the shared route costs and the system management costs to the corridor operating costs when determining the required state or local contribution to the operation. Amtrak has estimated that these costs represented an additional 37 percent above and beyond the basic train costs in FY 1994. This analysis projects only the direct, or "train-related" costs. It also excludes possible cost changes that may result from Amtrak's renegotiation of operating contracts with the railroads which will occur in 1996.

Costs

Unit costs shown in Table ES-7 have been derived from recent Amtrak data for the Seattle-Portland service (Mount Rainier), and checked against comparable data for the Capitol Corridor service in California and other corridor operations. All costs are based on data for the federal 1994 fiscal year (October 1993-September 1994).

Table ES-7
Projected Unit Costs of Corridor Operation - $

Cost Group	Seattle-Portland 1994	Capitol Corridor 1994	PNW Corridor Assumptions
Transportation Operations	9.85 per train mile	11.26 per train mile	10.00 per train mile
Locomotive Repair	3.10 per engine mile	2.27 per engine mile	3.00 per engine mile
Car Repair	1.60 per car mile	1.06 per car mile	1.20 per car mile
Track and Facility Maintenance	1.70 per train mile	1.30 per train mile	1.50 per train mile
On Board Service and Commissary	2.39 per train mile	2.34 per train mile	2.35 per train mile
Stations and Marketing	4.02 per passenger	5.55 per passenger	4.50 per passenger
Insurance and General Support	5.05 per train mile	4.98 per train mile	5.00 per train mile
Railroad Costs and Performance Payments	1.84 per train mile	2.84 per train mile	2.00 per train mile

Revenues

Current Amtrak fares between Seattle and Eugene are mileage based. Base one-way fares range from about $0.25 per mile for short trips to $0.13 per mile for the full 310-mile distance. Discounted round trip fares are offered, with a variety of restrictions and with limited seating availability for the lowest discounted fares, ranging from $0.18 per mile for short trips to as low as $0.07 per mile for the lowest round trip discount fare for the full distance.

The average trip distance (each half of a round trip is considered a trip) for all trips within the corridor based on samples of recent train manifests (reservation records) is 167 miles. The average trip length for the Seattle-Portland service is 155 miles, and the 1994 passenger revenue per trip averaged $.074 per mile. While this figure is near the lowest discount fare, it may reflect some passengers who use the corridor train in conjunction with a long distance trip, where even lower per mile fares are possible and the corridor's share of the total trip fare is lower than the cost of travel within the corridor alone. It also reflects additional discounts granted to children and seniors.

Table ES-8 illustrates current fare levels in the corridor for trips of varying length.

Table ES-8
Current Amtrak Fare Levels (May, 1995)

Trip	Miles	One Way	Discounted Round trip	One Way per Mile	Discounted Round Trip per Mile
Olympia to Centralia	22	$6	$8	$0.273	$0.182
Seattle to Tacoma	40	$8	$10	$0.200	$0.125
Seattle to Olympia	72	$14	$16	$0.194	$0.111
Portland to Eugene	124	$19	$20	$0.153	$0.081
Seattle to Vancouver, BC	155	$29	$42	$0.187	$0.135
Seattle to Portland	186	$25	$26	$0.134	$.070
Tacoma to Albany	227	$31	$32	$.137	$.071
Seattle to Eugene	310	$40	$42	$.129	$.068

Notes: Discounted round trip fare is the lowest available; other fares are offered at higher rates with less restriction.

Premium fare charged for Talgo train was $3.00 additional for travel between Seattle and Portland. Current Vancouver, BC-Seattle Talgo surcharge is $5.00.

Costs Versus Revenues

Table ES-9 projects train operating costs and revenue for the corridor service. As stated above, costs reflect Amtrak's current policy of charging all costs associated with train operations, including long term equipment maintenance costs and supporting overhead costs, to each service. They do not include the additional route- and system-related costs (about 37 percent in excess of costs given here) *some* of which could be included in computations of required support levels depending on the language of the 403(b) contracts and Amtrak's policy at the time. Total estimated subsidy requirements resulting from low and high revenue assumptions are shown at the bottom of the table. Again, the extent to which this might be a state (or provincial) responsibility depends on the results of future negotiations.

The estimate of annual operating shortfalls for the first phase is a conservative planning estimate based on current operating experience in the corridor. It provides a good basis for decision making regarding the next increment of service improvement. In subsequent phases there are projected changes in assumptions, which may or may not be realized, that will have a significant bearing on the size of the subsidy requirements at these levels of service.

It is useful to put the subsidy requirements into a policy context. The cost recovery rate measures the percent of operating costs covered by user fees with the balance coming from public subsidy. Under the low passenger ridership scenario, the estimated cost recovery rate begins at approximately 33 percent and improves over time until approximately 74 percent of costs are recovered at project buildout. The 33 percent level compares favorably with most public transit systems, which generally recover approximately 25 percent to 30 percent from the farebox. Under the high range ridership projections, the estimated cost recovery rate begins at approximately 35 percent and improves over time until approximately 93 percent of costs are recovered at project buildout. Thus the intercity rail system is initially expected to require support at a rate comparable to transit systems and gradually improve.

Table ES-9 Projected Annual Costs and Revenues					
Attributes	**1995**	**2000**	**2005**	**2010**	**2015**
Train Miles (000)	476	1,428	2,130	2,742	3,354
Engine Miles (000)	476	1,428	2,130	2,742	3,354
Car Miles (000)	1,904	5,712	8,521	10,968	13,414
Low Passengers (000)	346	939	1,288	1,645	2,041
High Passengers (000)	375	1,052	1,486	2,011	2,625
Average Trip Length	165	190	215	225	230
Average Yield per Mile	0.080	0.100	0.120	0.140	0.160
COSTS ($000)					
Transportation Operations	4,760	14,279	21,301	27,419	33,536
Locomotive Maintenance	1,428	4,284	6,390	8,226	10,061
Car Maintenance	2,285	6,854	10,225	13,161	16,097
Track/Facility Maintenance	714	2,142	3,195	4,113	5,030
Onboard Service & Commissary	1,119	3,356	5,006	6,443	7,881
Stations and Marketing (Low)	1,557	4,267	5,796	7,403	9,186
Stations and Marketing (High)	1,687	4,734	6,688	9,048	11,811
General Support	2,380	7,139	10,651	13,710	16,768
Railroad Payments	952	2,856	4,260	4,484	6,707
TOTAL COSTS (LOW)	**15,194**	**45,136**	**66,825**	**85,958**	**105,267**
TOTAL COSTS (HIGH)	**15,323**	**45,643**	**67,716**	**87,603**	**107,892**
REVENUE ($000)[1]					
Low Passenger Revenue	4,569	17,847	33,230	51,821	75,120
Low Food/Beverage Revenue	467	1,268	1,739	2,221	2,756
TOTAL LOW REVENUE	**5,036**	**19,115**	**34,969**	**54,042**	**77,876**
High Passenger Revenue	4,949	19,990	38,341	63,337	96,585
High Food/Beverage Revenue	506	1,420	2,006	2,714	3,543
TOTAL HIGH REVENUE	**5,455**	**21,410**	**40,348**	**66,051**	**100,128**
SUBSIDY REQUIREMENTS ($000)					
Low Costs, Low Revenues	10,158	26,021	31,855	31,916	27,391
High Costs, High Revenues	9,869	24,233	27,368	21,552	7,763

1. Does not include revenue from local passengers on long-distance trains.

Estimated Annual Funding Requirements

While the rate of investment will be determined in large measure by the availability of funding, a reasonable range of annual funding can be estimated. Table ES-10 presents two scenarios for annual funding needs based on different rate-of-investment assumptions. The high end of the investment needs scale is the 20-year program which assumes 5 years per phase and annual operating subsidies based on the low passenger estimates. The other option reduces annual needs by spreading the implementation over 32 years (8 years per phase) and assumes the lower subsidy requirements based on the high passenger estimates.

Table ES-10
Total Annual Funding Needs
(Millions of 1995 US Dollars)

	Phase I	Phase II	Phase III	Phase IV	Buildout
20-Year Program					
Avg. Annual Capital Spending	$75.1	$75.0	$79.0	$135.1	$ 0.0
Avg. Annual Operating Subsidy	$10.2	$26.0	$31.8	$32.0	$27.4
Annual Funding Need (mil)	$85.3	$101.0	$110.8	$167.1	$27.4
32-Year Program					
Avg. Annual Capital Spending	$47.0	$46.8	$49.4	$84.4	$ 0.0
Avg. Annual Operating Subsidy	$ 9.9	$24.2	$27.4	$21.6	$ 7.8
Annual Funding Need (mil)	$56.9	$71.0	$76.8	$106.0	$ 7.8

Note: The annual capital funding need assumes that the funding requirements are evenly distributed on an annual basis within each phase. Therefore the Phase I capital need of $375.7 million would amount to an annual requirement of $75.1 million assuming 5-year phases or $47.0 million if each phase were stretched over 8 years. This analysis does not account for the effects of future inflation.

Source: MK/HDR, 1995.

The 20-year program would require annual investments starting at approximately $86 million and growing to over $167 million in the last phase. The buildout estimate assumes that no major capital requirements remain and only the operating subsidy requires support. The slower rate of investment assumed in the 32-year program would reduce the annual requirements to approximately $47 million in 1995 dollars in Phase I, with future phases topping out at $106 million. As a result of the high cost recovery rate of the operating scenario, the buildout subsidy would be less than $8 million.

Primary Constituencies

Principal Partners

The state of Washington, the state of Oregon and the Province of British Columbia have already come together and are jointly funding the current Options Report. This is a recognition on the part of all three jurisdictions that intercity passenger rail service is an important consideration of the future regional transportation infrastructure. Each entity also recognizes that there are significant potential economic benefits from expanded rail services, from improved accessibility for tourism and business travel to the facilitation of cross border coordination and cooperation. As a result a clear policy interest exists in the continued improvement of rail facilities and services.

Amtrak. Under the current regulatory environment Amtrak is designated the sole provider of intercity rail services on existing freight railroad tracks. As a result, it is very likely that Amtrak (or perhaps a successor entity) will continue to be the contractor for intercity rail service in the PNWRC. As a result of the recent Amtrak reorganization and the impending reductions in federal support, the emphasis has been shifting toward regionalization of services. It will increasingly be possible to have regional control over service decisions, product marketing, amenities such as food service and to some degree, cost control and management. These changes will encourage Amtrak to take a more partnership-oriented role, since it will require the combined efforts of all parties, especially the service provider, to ensure the ultimate success of the service.

Freight railroads. By virtue of their ownership of the right-of-way and trackage, the freight railroads will be significant participants in the development and expansion of intercity rail service in the corridor. The goal from the outset of the planning effort was to design an intercity system such that the capacity to move freight in the corridor is not adversely affected by the passenger service. The list of facility improvements presented in the engineering section achieves this goal based on current forecasts of future freight requirements. During the construction of these improvements, close coordination with the affected railroads will be imperative to ensure impacts and conflicts are minimized.

Local jurisdictions. There is already significant local community interest in the development of intercity rail services in the corridor. Many of these communities are concerned about the noise and safety impacts of increased service speeds and frequencies. In the case of port jurisdictions, the concerns are likely to focus on conflicts between passenger and freight rail movements. Some jurisdictions may see the corridor improvements as an economic development opportunity, and try to capitalize on the increase in traffic through their communities. Since the local interest in the corridor is generally limited to local concerns, the governance structure does not necessarily need to include individual representation from these communities. However, it would be prudent to acknowledge the need for strong local/regional cooperation and include mechanisms whereby local concerns can be effectively communicated.

Governance Options

The following is a description of three governance options and a brief analysis of the strengths and weaknesses of each.

Cooperative approach. The cooperative approach is essentially a continuation of the current model, whereby the principal parties participate in planning, decision-making and funding on a voluntary, cooperative basis. The representation is primarily at the senior staff level, with each entity responsible for taking major decisions back to their respective administrative or legislative authorities for approval. The management of various program elements such as project development and contracting for service would be assigned to one of the partner entities for implementation. Funding of projects and services would be negotiated as the need arose.

This approach has been successful to date. However, the challenges facing program development may be more than this approach can reasonably accommodate. The best features of the cooperative approach include: 1) making use of existing resources at each jurisdiction for program implementation; 2) recognizing the decision-making autonomy of each principal partner; and, 3) providing maximum flexibility to adjust to changes in the environment.

The weaknesses of this approach include: 1) lack of a formal structure which may not provide enough specific program identity; 2) lack of a mechanism for addressing potential conflicts among the principal partners; 3) inadequate definition of responsibilities and commitments; and, 4) requires an ad hoc approach to policy-maker involvement.

Formalized collaboration through a Memorandum of Agreement. This approach takes the cooperative model and provides additional structure in the form of an agreement (such as a Memorandum of Agreement) which articulates the major program objectives, the common interests of the principal partners, responsibilities for program implementation, procedures for negotiating cost sharing responsibility and possible dispute resolution mechanisms. The agreement could be ratified by either administrative or legislative action. Implementing sub-agreements could be negotiated on an annual, biennial or project phase basis that would include funding responsibilities for project development and operating subsidy needs.

The best feature of this approach is that most of the process and responsibility issues are negotiated up front and documented in an agreement. This provides the program with a clear set of operating principles and allows staff to focus almost exclusively on implementation. The use of a formal agreement will also serve to increase the program's profile with policy-makers, which may result in higher priorities for project funding requests.

A potential weakness of this approach is that most of the interaction among the principal partners is done at the staff level. The involvement of policy makers in program and funding decisions will be the responsibility of staff at each jurisdiction, although, if this were necessary, a policy-level advisory commission could be incorporated into the agreement.

Create an institutional structure. The third governance model is to create a dedicated institutional structure with responsibility for program implementation and policy-level representation. In this example, a cooperative entity would be formed by agreement. The new entity would have complete authority over program decisions and have the ability to issue debt and to contract with vendors for project construction and service provision. The board would be composed of elected officials, or appointed representatives from each partner jurisdiction and some dedicated or reliable source of funding would be identified.

This approach allows policy-makers from the two states and the province to be formally involved in program decisions and negotiations. Funding would be addressed at the start of the program. The responsibility and authority for implementation would be located within a single entity, potentially increasing the effectiveness of program development.

The biggest negative attribute of this approach is the difficulty associated with trying to link three completely separate and autonomous entities under one institutional umbrella. Another serious weakness is the increased costs associated with operating a new entity that may duplicate many functions. Also, the creation of an additional layer of government may not be warranted for a program where the goal is to evaluate the merits of each new increment of development and operation within the context of a complete regional transportation system.

O. COST SHARING RESPONSIBILITIES

The development of the PNWRC system will benefit many parties, and the goal of the cost allocation mechanism should be to reflect, in some mutually agreeable manner, the proportionate share of benefits among these entities. Ideally the mechanism will incorporate all investments in the system plan, be updated over time and be flexible to adjust to changing conditions and system performance. However, the only real criteria for a successful allocation methodology is whether the partner jurisdictions are satisfied that the cost sharing is equitable. The mechanism should also be tailored, or easily adaptable, to the overall decision making framework which will govern system development.

P. FUNDING STRATEGIES

The following is a brief overview of the major sources of potential project funding.

U.S. Federal Sources

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 set a new direction for federal transportation policy. Instead of narrow funding categories emphasizing highway construction, ISTEA shifted priority to intermodal connections and increased flexibility to meet state and regional mobility and environmental goals. Flexibility can be a hollow promise, however, without full funding. While Congress authorized $155 billion over six years, budget caps and deficit reduction have flattened actual federal spending on transportation this year to about $10 billion less than authorized. With the emphasis in Washington, D.C. increasingly focused on deficit control, the trend is likely to get worse. Thus the initial promise of ISTEA has been less than had been hoped.

Federal transportation funds generally are either allocated by formula to states and programs or they are "discretionary," meaning they are authorized based on the personal request of a member of Congress. Within the formula allocated funds, some flexibility is available to the state and the Metropolitan Planning Organizations (MPOs) in funding decisions. Major applicable categories of program funding under ISTEA are the following:

Surface Transportation Program (STP). Eligible projects include roads, transit, bicycle and pedestrian facilities, car and vanpool facilities, and marine and airport access. Within STP, funds are set aside for enhancements, roadway hazards, railway crossings, and flexible funding for a variety of uses. Within the "enhancements" category, funds are specifically set aside for historic preservation and for rehabilitation of historic transportation structures, which could apply to station improvements.

National Highway System (NHS). The National Highway System will include all interstate routes, major urban and rural arterials, intermodal facilities and highways important for defense purposes. Funding under NHS is available for construction, operational improvements, highway safety, traffic management and transportation enhancements. Improvements to access roads serving major NHS intermodal terminals are also included under this funding source.

Congestion Management and Air Quality (CMAQ). CMAQ funds projects designed to help achieve federal clean air standards by reducing transportation-related emissions.

Non-ISTEA U.S. Federal Sources

Federal Transit Administration. Capital and operating funds are available for transit projects in urban and rural areas and for the elderly and disabled. The main categories are Section 3, transit capital, and Section 9, transit formula funds for capital and operations.

Swift Rail Development Act. The Swift Rail Development Act of 1994 identifies the PNWRC as one of five high-speed passenger rail corridors in the United States. The act clearly places responsibility for corridor development on state and local interests and encourages the participation of private entities. The role of the federal government has been defined primarily as a facilitator for technology development and assistance in corridor planning. While the high speed corridor designation does not guarantee federal participation in system development, it may offer an opportunity for attracting federal capital funds, should they become available in future appropriations.

Amtrak. Amtrak has primarily invested its limited capital funding in the Northeast Corridor and California. However, unlike other modes of transportation, Amtrak has not had a dedicated source of capital funding, and has relied on specific capital appropriations from Congress. Proposed Senate legislation would transfer the 1/2 cent per gallon tax from the transit account of the highway trust fund to a new intercity rail passenger account until the year 2000. These dedicated funds would provide almost $700 million for capital improvements and investments in the Amtrak system, reducing operational costs. Amtrak has stated that if it is to be subsidy free in seven years, it needs adequate capital funding for plant and equipment. Amtrak services beyond the PNWRC would benefit from many of the capacity and speed improvements proposed, thus encouraging additional Federal funding participation.

In October, the House Committee on Transportation and Infrastructure passed the Amtrak Reform and Privatization Act of 1995. This legislation would eliminate burdensome rules which govern route selection, overhaul labor protection rules, limit liability, establish contracting out procedures and eliminate the government's ownership and control over the company's board of directors. Operating assistance would be reduced and eliminated over the next seven years. If passed into law, the bill will provide significant new tools for Amtrak management to streamline operations and reduce the need for Federal operating assistance.

Canadian Federal Funding

Given the international character of the PNWRC, along with demonstrated tourism and economic benefits, a strong rationale for Canadian federal investment appears to exist. The magnitude, timing and mechanism for such investment remains to be explored.

State and Provincial Funding

The current federal funding environment in both the US and Canada will likely dictate that most of the funding for intercity rail will need to be raised at the state, provincial and on possibly the local level. This will certainly be the case in the first phase of the program as federal support for such programs is likely to be minimal for the foreseeable future.

Each of these jurisdictions has or is currently addressing a long list of unfunded and underfunded transportation programs. The development of an efficient and attractive intercity rail program has been identified as a worthy goal and capital funds have already been committed by Washington and Oregon, with cooperative funding to perform this Options Report from British Columbia. However, without an infusion of new transportation revenues, the competition for funding will be extremely competitive and ultimately it will be the respective legislative bodies that will decide how intercity rail fits within the overall transportation system and the priority that rail improvements should have in the allocation of funding.

British Columbia. Generally, transportation programs in British Columbia are funded from general purpose tax revenues. The provincial government has interests in a number of transportation areas including: highways, bus and transit, ferries, and commuter rail. The participation of the province in funding expansion of intercity rail service between Vancouver and Seattle will need to compete favorably with other worthwhile transportation investment opportunities. Given the international dimension of the project, the magnitude of investment needs and the potential economic benefits, the province could look to the development of a public/private provincial partnership as a mechanism to fund intercity rail in the Canadian portion of the PNWRC.

Washington. The State Legislature is planning to consider enhancing transportation revenue in the 1997 budget session. The effort to bolster eroding state transportation funds and offset reductions in the availability of federal funds is being coordinated by legislative leadership and includes business a well as state and local government interests. Most discussions of transportation revenue enhancements include the likelihood that any proposals to increase taxes will ultimately be submitted to voters statewide. The 1995-97 biennial budget for the Washington State Department of Transportation is $3.13 billion, an eight percent decrease from the previous biennium. While the Washington State Transportation Commission had requested major increases in the state passenger rail program, the legislature, in an effort to balance competing highway, ferry, and public transportation needs, reduced funding. Legislative leadership indicates an interest in exploring enhanced state funding for rail programs as outstanding issues regarding future federal funding or rail programs are resolved.

The following are the major Washington State funding sources that could be applied to the Intercity Rail Passenger Program.

- **Transportation Fund.** The Transportation Fund was created by the 1990 Legislature. It was intended as a new general purpose transportation funding source not limited by the 18th Amendment to highway spending. The motor vehicle excise tax (MVET) is the source and the Fund is subject to legislative appropriation every two years. During the most recent two biennia, monies in the Transportation Fund were primarily dedicated to the Department of Transportation's Category C program to expand the capacity of state highways. Future allocations will be determined by legislative priorities, and the intercity rail program will be competing for funds from this source.

- **Transportation Improvement Board (TIB).** The TIB is an independent agency founded in 1988 that distributes funds through the Urban Arterial Trust Account (UATA) and the Transportation Improvement Account (TIA). Competition for funding is fierce and projects are ranked based on specific criteria. The UATA funds city and urban county road and street projects to reduce congestion, improve safety, and address geometric and structural problems. The TIA funds projects to alleviate congestion resulting from economic development and population growth.

  The Central Puget Sound Transportation Account was transferred to the TIB in July 1995. This fund was created by the 1990 Legislature as a new funding source specifically for public transportation in the Central Puget Sound area. Funds are allocated in a competitive process by committee that includes representatives of cities, counties, transit, WSDOT, and other interests. During the just completed biennium, approximately $17 million was awarded to 18 projects. The largest award was $3.6 million, with most allocations in the $200,000 to $400,000 range. The applicant for these funds must be one of the local transit agencies, therefore if the commuter rail program is started, there may be an opportunity to match funds from this account with other passenger rail funds for rail improvements in the central Puget Sound area.

- **Proposed Intermodal Facilities Program.** A noteworthy development which is new within the state's Public Transportation and Intercity Rail Passenger Plan (which is currently in development) is a proposed Intermodal Facilities program. Under discussion currently within WSDOT is the issue that no existing program explicitly recognizes the need for significant new funding for facilities and improvements that address multimodal transportation. If a state interest could be demonstrated in the linking or hub function of intermodal facilities, then such a new program could potentially be created and funded with new monies.

- **Issuance of Bonding**. The issuance of bonds is an additional possibility to underwrite the revenue necessary for the development of the PNWRC.

Oregon. The Oregon Department of Transportation faces the same funding constraints as Washington with respect to the use of its major source of transportation funding, the gas tax. As a result, there is significant competition for resources among the non-highway transportation projects.

Local Government Support

Generally the opportunities for cost sharing with local governments are somewhat limited. However, in the case where joint use of facilities is possible, opportunities may exist where costs can be shared with local jurisdictions. The best example of this scenario is the proposed commuter rail development plan in the Puget Sound region. Projects which will add to the rail capacity in King, Snohomish and Pierce Counties will benefit both the intercity service and future commuter service and should be considered for joint local/state funding. However, the funding for commuter rail is contingent on a successful funding initiative for the Regional Transit Authority. After failing at the polls in March 1995, the RTA will make one more attempt to gain funding support in 1996.

Another potential opportunity to attract local funding may exist at station sites. Many of the communities along the corridor have been developing multimodal transportation centers which would provide connections between the intercity rail system and other local and regional transportation systems. WSDOT has been an active participant in the planning and development of intermodal transportation facilities. This participation has been contingent on the demonstration of a strong local commitment to these projects, including local ownership and operation of the facilities. In those instances where intermodal facilities have been developed, there has been a great deal of local initiative to develop cost sharing. These initiatives have included financial participation from local governments, transit districts, and Ports.

Freight Interests

Private Railroads. The private railroads, in particular the Burlington Northern Santa Fe, have an interest in making substantial investments in the corridor to maintain their capacity and meet the demands of shippers for freight movement. While the improvements identified in the PNWRC Options Report assume that the freight conditions are maintained as they would be without intercity rail, based on current practices, there will continue to be opportunities for joint financing of improvements where both passenger and freight rail users would clearly benefit.

One of the principle assumptions in the development of the PNWRC has been the establishment of a public/private partnership with the private freight railroads. Improvements designed for the enhancement of rail passenger service are assumed to be the responsibility of rail passenger interests, while improvements designed to address freight needs would be the responsibility of freight interests. Where improvements may reasonably benefit both freight and passenger interests, a cost sharing mechanism would need to be negotiated to equitably divide financial responsibility according to relative benefit.

Ports. In addition to the private railroads, the local port districts have an interest in the efficient movement of freight and, as such, could participate in projects where joint freight and passenger rail benefit exists. Port districts have a significant interest in the reliability and capacity of the freight rail system, since competitiveness is determined in large measure on their ability to offer fast and convenient transshipment opportunities. Therefore a project that could be demonstrated to provide significant joint benefits, could potentially be funded through a combination of public rail passenger funds, port funds and private railroad funds. The onus, however, will likely rest with the rail passenger interests to demonstrate the joint benefit and propose a joint funding program.

Executive Summary
List of Figures and Tables

This ***Options for Passenger Rail in the Pacific Northwest Rail Corridor*** report is published in two sections: 1) executive summary, and 2) technical background information.

For additional technical information on the ***Options for Passenger Rail in the Pacific Northwest Rail Corridor*** report please contact:

State of Washington:
Washington State Department of Transportation
Rail Office
PO Box 47387
Olympia, WA 98504-7387
Telephone: (360) 705-7901 (Olympia area) **Toll Free**: 1-800-822-2015
Fax: (360) 705-6821
WSDOT internet homepage: http://www.wsdot.wa.gov
E-mail: rail@wsdot.wa.gov

Copies of the complete ***Options for Passenger Rail in the Pacific Northwest Rail Corridor*** report, including the technical background, can be viewed at libraries throughout Washington State.

Copies of the executive summary of the report are available from the WSDOT Rail Office upon request to Washington State residents at no charge.

The technical background protion of the report is available for purchase by Washington State residents by sending a $10.00 check or money order payable to the state of Washington at the Rail Office address above. The purchase price helps cover printing and postage expenses. Please include your return mailing address when purchasing the report.

Province of British Columbia:
Nicholas Vincent
Manager, Transportation Policy
Ministry of Employment and Investment
4th Floor, 712 Yates Street
Victoria, BC V8V 1X4
Telphone: (604) 387-1879
Fax: (604) 356-0380
MEI Internet Homepage: http://www.ei.gov.bc.ca

Copies of the complete ***Options for Passenger Rail in the Pacific Northwest Rail Corridor*** report, including the technical background, can be viewed at selected libraries throughout the greater Vancouver region, British Columbia.

State of Oregon:
Robert Krebs
Manager, High Speed Rail Project
Oregon Department of Transportation
555 13th Street NE
Salem, OR 97310
Telephone: (503) 986-4169
Fax: (503) 986-4173